

START

0015227

9102868

91-WOB-192

JUL 2 1991

Mr. Timothy L. Nord
Hanford Project Manager
State of Washington
Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504



Dear Mr. Nord:

LERF POND LINER, TEST PAD NO. 6

Reference: Letter T. L. Nord to S. H. Wisness, "LERF Pond Liner, Test Pad No. 6", dated April 30, 1991.

The reference letter pointed out some concerns and potential discrepancies between ECN No. 72 and related inspection reports for the Liquid Effluent Retention Facility (LERF).

To resolve Washington State Department of Ecology (Ecology) concerns, a technical meeting was held on May 2, 1991. In attendance at the meeting were DOE Field Office, Richland, Westinghouse Hanford Company, Kaiser Engineers Hanford Company (KEH), KEH soils consultants, and Ecology. As the attached meeting synopsis indicates, Ecology expressed satisfaction with Hanford's actions and rationale.

Some concerns were subsequently resurrected. An additional certification statement was personally accepted by you on May 5, 1991.

If you have any questions, please contact Ms. Teresa M. Hennig of Waste Management on (509) 376-6888.

Sincerely,

ORIGINAL SIGNED BY:

Steven H. Wisness
Hanford Project Manager

WMD:TMH

Attachment

cc w/att
G. Anderson, Ecology
T. Michelena, Ecology
P. Stasch, Ecology
D. E. Kelley, WHC
T. B. Veneziano, WHC

bcc: WOB OFF FILE
WMD RDG FILE
WOB RDG FILE
AMO RDG FILE (A6-53)
TH HENNIG/WOB RDG FILE
CCC



RECEIVED

JUL 03 1991

DOE-RL/CCC

6.13.1e

OFFICE >	WMD	PMD	PMD	WMD <i>TO EAB 6/28/91</i>	ERD <i>RAH 6/28/91</i>	TPA <i>SHW</i>
SURNAME>	HENNIG	LASSILA	CHIN	DAILY <i>JD</i>	BRACKEN <i>6/28/91</i>	<i>7/1/91</i>
DATE >	5/31/91	<i><-----previously concurred with 6/28/91</i>				

(Please Return To Sabra Zaro, A6-52, 6-9869)



12S 7617RL

SUBJECT: Concerns identified in Ecology 4/10/91 letter "LERF Pond Liner, Test Pad No. 6"

Early in the project, the best information available was gathered and developed into the C-4 Specification. As the project progressed, results from field and laboratory tests allowed adjustments and fine tuning of the design. This is precisely why a separate test fill section was included when the C-4 Specification was originally issued.

Once the test fills were completed and permeability tests were indicating positive results, lessons learned from the test fill experience were incorporated into the C-4 Specification via ECN 72. The purpose of the C-4 Specification is to ensure that the finished basins are environmentally and structurally safe. Because the test fills are not operable facilities, they pose no threat to the environment or public. The knowledge gained through this testing effort has provided a means of constructing a soil/bentonite liner system in the basins that will meet or be substantially better than prescribed permeability criteria.

The following is a tabulation of the discussions and conclusions of the technical meeting held on May 2, 1991.

1. Concerning paragraph 2, 3 and 6 of the subject letter, technical justification was provided showing that the 19.5% - 24.5% moisture range was carefully selected and is consistent with the percentages of bentonite. The attached characteristic charts and data were presented and accepted by Ecology (Gary Anderson) at the meeting.
2. It was further agreed that ECN W-105-072 was not arbitrarily issued. The review of the percentages of the moisture and bentonite, and compaction requirements resolved the Ecology suspicions cited in the subject letter.
3. KEH/WHC will not change the soil moisture tolerance back to the original range of 0 to 4 percent.
4. Meeting participants, including Ecology, continue to agree that the preliminary and final results of the third test fill have produced favorable permeability rates.
5. The April 10th and 18th letters from Chen-Northern Inc. were discussed in relation to certifying that the dikes will not fail due to scouring or piping. It was agreed by Ecology (Gary Anderson) that both of these Professional Engineer (PE) stamped letters are acceptable and complete documentation that "the dikes will not fail due to scouring or piping" as required by WAC 173-303-650. It was also agreed that the Professional Engineer's opinion as indicated by the stamping of the aforementioned letters is acceptable and is consistent with the EPA permitting requirements for land disposal facilities cited in the Federal Register July 26, 1982, and as stated in RCW 18.43.070, Certificates and Seals, 1989.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

April 30, 1991

Mr. Steven H. Wisness
Hanford Project Manager
United States Department of Energy
P.O. Box 550
Richland, Washington 99352

Re: LERF Pond Liner, Test Pad No. 6

Dear Mr. Wisness:

My staff have reviewed the inspection reports and associated documents for the placement of Test Pad No. 6. After comparing ECN No. 72 to the field tests, some discrepancies have been noted.

Six of the 21 tests show moisture exceeding the 4% over optimum limit. The log shows that an "OIR" and ECN W-105-72 were issued increasing the specified upper limit of optimum moisture by 0.5% of the average of the moisture content for each lift. Even after this ECN had arbitrarily been issued raising the limit on moisture content some of the tests still fail. While it is suspicious to exceed specifications and then issue an immediate ECN attempting to justify the out of specification material, it is incredible to do this and not bring the failing tests into compliance.

The range of moisture contents allowed in ECN 72 (6.5% on the average of several consecutive tests) exceeds the moisture range commonly allowed for material whose moisture content is controlled by borrow pit irrigation, sprinkler trucks and disc harrows. For example, the State of Washington Department of Transportation limits individual tests in highway construction to a 6 % range, while the United States Bureau of Reclamation limits the moisture variation on individual tests in cohesive soils in dam construction to a 4% range, all on projects where production can exceed 50,000 cubic yards per day.

Using a pugmill should result in closer control of mix proportions, not wider. Earth wet over optimum moisture is easily and quickly dried in the field. The purpose of a twenty-four hour stockpile is to test material for moisture content before it is placed. You are directed to change the soil moisture tolerance back to its original range of 0 to 4% over optimum for each individual sample.

RECEIVED

MAY 20 1991

DOE-RL/CCC
191-W08-100

6-13-91

RECEIVED

MAY 06 1991

DOE-RL/AMP
191-TPA-102

Staven H. Wisness
April 30, 1991
Page 2

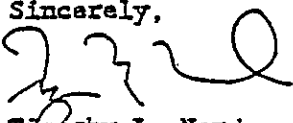
We will accept the results of Test Pad No. 6 and the final amended test report because densities were always attained, the final permeability results were good and expert testimony has given these results a favorable opinion.

The reason this matter has come up at this time is that we were given the ECN in January and the test results upon which it was based were given us in April. We have just now had the opportunity to compare the two. The final test report should have included the fact that the test fill did not meet the specifications. A report that includes only favorable data is scientifically indefensible.

Final approval for construction will await approval of the final submittal of the properly prepared certification of the existing embankments. The certification received, signed by Edgar A. Goakey, does not specifically certify that the dikes "will not fail due to scouring or piping" as required by WAC 173-303. The April 18 and April 10 letters from Chen Northern Inc. discuss piping through the liner (which is irrelevant) and piping and scour in the dike, but certify to nothing.

If you have any questions about these requirements, please call Paul Stasch of our office at (206) 459-6725.

Sincerely,


for Timothy L. Nord
Hanford Project Manager
Department of Ecology

TLN:ga

cc: Dan Duncan, USEPA
Dave Nylander, Ecology
T. Veneziano, AR
R. Narvaez, USDOE-RL
R. Julian, WHC
Paul Stasch, Ecology

91123
Determined* and Calculated (Interpolated and
Extrapolated) Values of OM (g water/g admix),
for Different Admixes.

=====

	P e r c e n t B e n t o n i t e					
	10.0	11.5	12.0	13.0	14.0	14.5
Determined OM	0.167		0.197		0.217	
Calculated OM		0.1895		0.207		0.222

=====

*- Determined by Chen Northern, Inc.

=====

Next step is the determination of moisture content at 92MD;
this is done in table 3.

Table 3.

Moisture Content at 92MD.

	P e r c e n t B e n t o n i t e					
	10.0	11.5	12.0	13.0	14.0	14.5
Determined*	0.228		0.251		0.290	
Calculated		0.245		0.2705		0.300

*-Determined by Chen Northern, Inc.

Chen Northern, Inc.

Consulting Engineers & Scientists

MOISTURE-DENSITY RELATIONSHIP DATA SHEET

☐ TRI-CITIES
2214 NORTH 4TH AVENUE
P. O. BOX 2801
TRI-CITIES, WA 99302
(509) 547-1671
FAX (509) 547-1673

REPORT TO: KAISER ENGINEERING HANFORD
P.O. BOX 888
RICHLAND, WA 99352

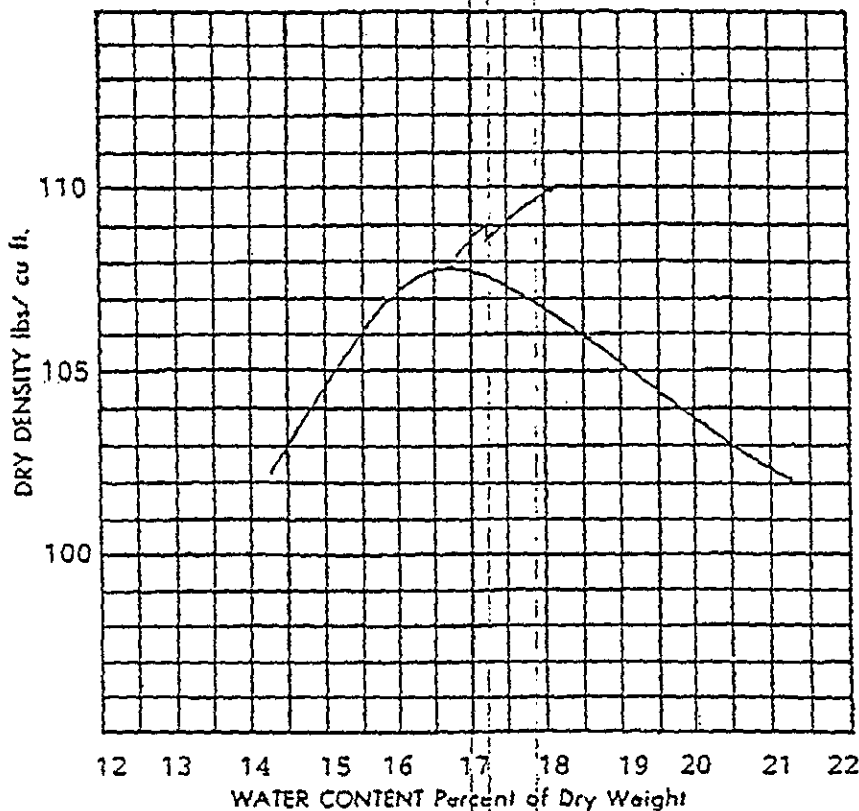
DATE: OCT. 27, 1990
JOB NUMBER: 86-1905
SHEET: 1 OF 1
INVOICE NO.:
LAB NO.: 41004
DATE SAMPLED: 10-24-90
DATE RECEIVED: 10-24-90
SAMPLED BY:

PROJECT: W105
CONTRACTOR: KEH
SAMPLE LOCATION: LAB PREP.

MATERIAL USE: BENTONITE LINER

MECHANICAL ANALYSIS
SIZE % PASS SPECS.

MOISTURE-DENSITY RELATIONSHIP



10% BENTONITE

UNIFIED CLASSIFICATION (ASTM D2487)

SPECIFIC GRAVITY: -
LIQUID LIMIT: -
PLASTICITY INDEX: -

TEST PROCEDURE WSDOT 609
MAX. DENSITY: 107.9 ppcf
OPT. MOIST.: 16.7%
RAMMER TYPE: MANUAL
PREPARATION PROCEDURE: -
PENETRATION RESIS.: -

REMARKS:

J. THOMAS
KEH - COA OFFICER
[Signature]

DISTRIBUTION:

Reviewed By: *[Signature]*

Chen Northern, Inc.

Consulting Engineers & Scientists

MOISTURE-DENSITY RELATIONSHIP DATA SHEET

☐ TRI-CITIES
2214 NORTH 4TH AVENUE
P.O. BOX 2601
TRI-CITIES, WA 99302
(509) 547-1071
FAX (509) 547-1073

REPORT TO: KAISER ENGINEERING HANFORD
P.O. BOX 888
RICHLAND, WA 99352

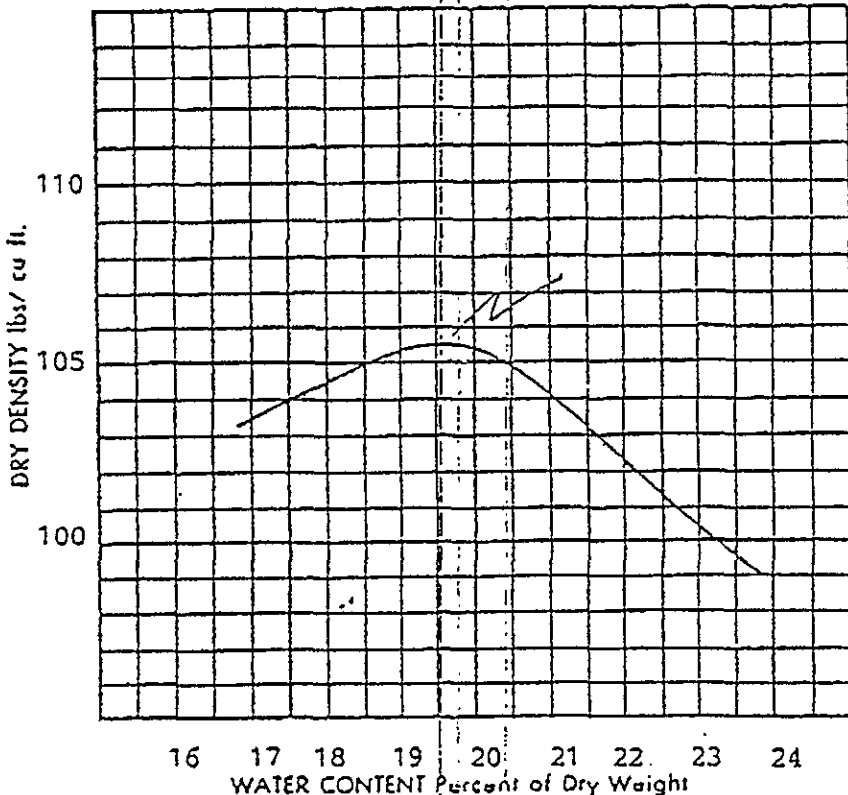
DATE: OCT. 27, 1990
JOB NUMBER: 86-1905
SHEET: 1 OF 1
INVOICE NO.:
LAB NO.: 41005
DATE SAMPLED: 10-24-90
DATE RECEIVED: 10-24-90
SAMPLED BY:

PROJECT: W105
CONTRACTOR: KEH
SAMPLE LOCATION: LAB PREP.

MATERIAL USE: BENTONITE LINER

MECHANICAL ANALYSIS
SIZE % PASS SPECS.

MOISTURE-DENSITY RELATIONSHIP



12% BENTONITE

UNIFIED CLASSIFICATION (ASTM D2487)

SPECIFIC GRAVITY: -
LIQUID LIMIT: -
PLASTICITY INDEX: -

TEST PROCEDURE WSDOT 609
MAX. DENSITY: 105.3 pcf
OPT. MOIST.: 19.7%
RAMMER TYPE: MANUAL
PREPARATION PROCEDURE: -
PENETRATION RESIS.: -

REMARKS:

J. THOMAS

DISTRIBUTION:

Reviewed By:

KEH - COA OFFICE

Chen Northern, Inc.

Consulting Engineers & Scientists

MOISTURE-DENSITY RELATIONSHIP DATA SHEET

☐ TRI-CITIES
2214 NORTH 4TH AVENUE
P.O. BOX 2601
TRI-CITIES, WA 99302
(509) 547-1671
FAX (509) 547-1673

REPORT TO: KAISER ENGINEERING HANFORD
P.O. BOX 888
RICHLAND, WA 99352

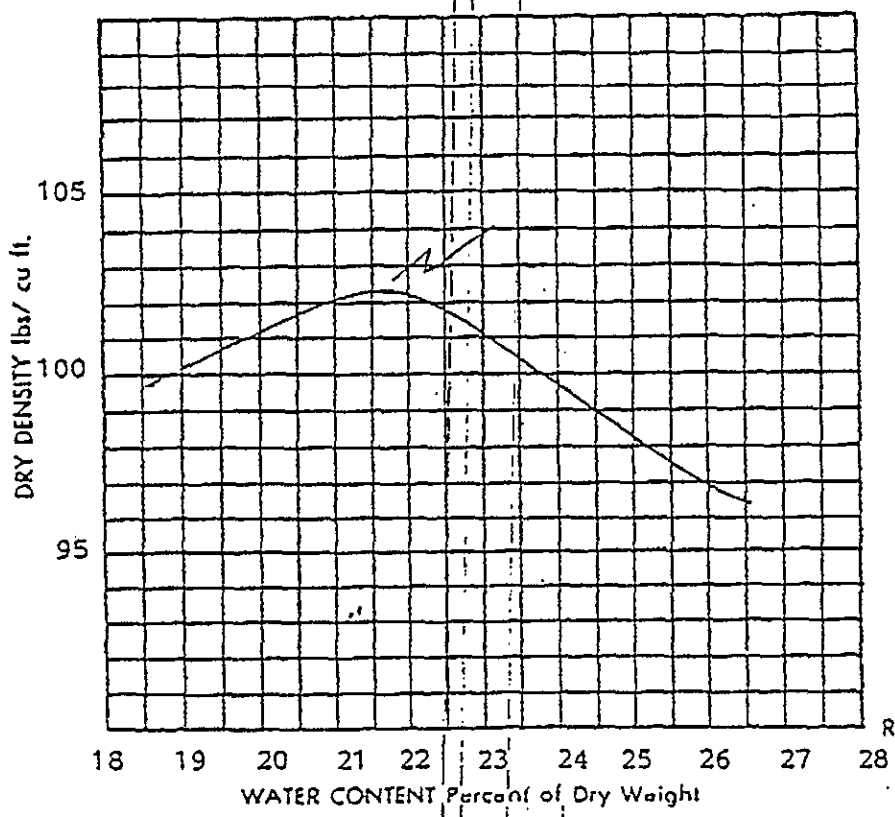
DATE: OCT. 27, 1990
JOB NUMBER: 86-1905
SHEET: 1 OF 1
INVOICE NO.:
LAB NO.: 41006
DATE SAMPLED: 10-24-90
DATE RECEIVED: 10-24-90
SAMPLED BY:

PROJECT: W105
CONTRACTOR: KEH
SAMPLE LOCATION: LAB PREP.

MATERIAL USE: BENTONITE LINER

MECHANICAL ANALYSIS
SIZE % PASS SPECS.

MOISTURE-DENSITY RELATIONSHIP



14% BENTONITE

UNIFIED CLASSIFICATION (ASTM D2487)

SPECIFIC GRAVITY: -
LIQUID LIMIT: -
PLASTICITY INDEX: -

TEST PROCEDURE WSDOT 609
MAX. DENSITY: 102.1pcf
OPT. MOIST.: 21.7%
RAMMER TYPE: Manual
PREPARATION PROCEDURE: Wet
PENETRATION RESIS.:

REMARKS:

J. THOMAS
KEH - COA Officer

DISTRIBUTION:

Reviewed By:

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
SH Wisness, RL	TL Nord, Ecology	Incoming: 9102868

Subject: LERF POND LINER, TEST PAD NO. 6

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att
		Correspondence Control	A3-01	X
		President's Office	B3-01	
		B. A. Austin	B2-14	X
		R. J. Bliss (Level I)	B3-04	X
		L. C. Brown	H4-51	X
		W. T. Dixon	B2-35	X
		C. J. Geier	B2-19	X
		W. H. Hamilton, Assignee	N3-10	X
		H. D. Harmon	R2-52	X
		K. L. Hoewing	B3-06	X
		R. J. Julian	R1-48	X
		K. R. Jordan	B3-51	X
		D. E. Kelley	R1-48	X
		M. K. Korenko	B3-08	X
		R. E. Lerch	B2-35	X
		H. E. McGuire	B2-35	X
		D. E. McKenney	R1-48	X
		L. L. Powers	B2-35	X
		T. B. Veneziano	B2-35	X
		R. D. Wojtasek	L4-92	X
		EDMC	H4-22	X